

PERILLA

Medicinal and Aromatic Plants – Industrial Profiles

Individual volumes in this series provide both industry and academia with in-depth coverage of one major medicinal or aromatic plant of industrial importance.

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PERILLA

The Genus *Perilla*

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CONTENTS

Preface to the Series	vii
Preface	ix
Acknowledgements	x
Contributors	xi
1 Introduction	1
<i>He-0 Yu</i>	
2 Cultivation of Perilla	9
Koji Tanaka, Young-Shik Kim and He-Ci Yu	
3 Cell and Tissue Cultures of Perilla	19
<i>Jian-Jiang Zhong and Toshiomi Yoshida</i>	
4 Applications and Prescriptions of Perilla in Traditional Chinese Medicine	37
<i>Yuh-Pan Chen</i>	
5 Anti-inflammatory and Antiallergic Activities of Perilla Extracts	47
<i>Masatoshi Yamazaki and Hiroshi Ueda</i>	
6 Perilla and the Treatment of Allergy – A Review	55
<i>He-Ci Yu, Aimo Niskanen and Jukka Paananen</i>	
7 A Clinical Investigation of Perilla Extract Cream for Atopic Dermatitis	71
<i>Kazuhiko Oyanagi</i>	
8 The Development and Application of Perilla Extract as an Anti-Allergic Substance	83
<i>Kenichi Kosuna and Megumi Haga</i>	
9 Lipid Composition and Nutritional and Physiological Roles of Perilla Seed and its Oil	93
<i>Hyo-Sun Shin</i>	
10 Chemical Studies on the Constituents of <i>Perilla frutescens</i>	109
<i>Tomoyuki Fujita and Mitsuru Nakayama</i>	
11 Chemotypes and Pharmacological Activities of Perilla	129
<i>Mamoru Tabata</i>	

2	Molecular Biology in <i>Perilla frutescens</i>: Isolation of Specifically Expressed Genes in Chemotypes	143
	<i>Mami Yamazaki, Zhi-Zhong Gong and Kazuki Saito</i>	
13	The Chemistry and Applications of Anthocyanins and Flavones from Perilla Leaves	149
	<i>Kumi Yoshida, Kiyoshi Kameda and Tadao Kondo</i>	
14	Anthocyanins from Perilla	171
	<i>Lucy Sun Hwang</i>	

PREFACE TO THE SERIES

There is increasing interest in industry, academia and the health sciences in medicinal and aromatic plants. In passing from plant production to the eventual product used by the public, many sciences are involved. This series brings together information which is currently scattered through an ever increasing number of journals. Each volume gives an in-depth look at one plant genus, about which an area specialist has assembled information ranging from the production of the plant to market trends and quality control.

Many industries are involved such as forestry, agriculture, chemical, food, flavour, beverage, pharmaceutical, cosmetic and fragrance. The plant raw materials are roots, rhizomes, bulbs, leaves, stems, barks, wood, flowers, fruits and seeds. These yield gums, resins, essential (volatile) oils, fixed oils, waxes, juices, extracts and spices for medicinal and aromatic purposes. All these commodities are traded world-wide. A dealer's market report for an item may say "Drought in the country of origin has forced up prices".

Natural products do not mean safe products and account of this has to be taken by the above industries, which are subject to regulation. For example, a number of plants which are approved for use in medicine must not be used in cosmetic products.

The assessment of safe to use starts with the harvested plant material which has to comply with an official monograph. This may require absence of, or prescribed limits of, radioactive material, heavy metals, aflatoxin, pesticide residue, as well as the required level of active principle. This analytical control is costly and tends to exclude small batches of plant material. Large scale contracted mechanised cultivation with designated seed or plantlets is now preferable.

Today, plant selection is not only for the yield of active principle, but for the plant's ability to overcome disease, climatic stress and the hazards caused by mankind. Such methods as *in vitro* fertilisation, meristem cultures and somatic embryogenesis are used. The transfer of sections of DNA is giving rise to controversy in the case of some end-uses of the plant material.

Some suppliers of plant raw material are now able to certify that they are supplying organically-farmed medicinal plants, herbs and spices. The Economic Union directive (CVO/EU No 2092/91) details the specifications for the obligatory quality controls to be carried out at all stages of production and processing of organic products.

Fascinating plant folklore and ethnopharmacology leads to medicinal potential. Examples are the muscle relaxants based on the arrow poison, curare, from species of *Chondrodendron*, and the antimalarials derived from species of *Cinchona* and *Artemisia*. The methods of detection of pharmacological activity have become increasingly reliable and specific, frequently involving enzymes in bioassays and avoiding the use of laboratory animals. By using bioassay linked fractionation of crude plant juices or extracts, compounds can be specifically targeted which, for example, inhibit blood platelet aggregation, or have antitumour, or antiviral, or any other required activity. With the assistance of robotic devices, all the members of a genus may be readily screened. However, the plant material must be fully authenticated by a specialist.

The medicinal traditions of ancient civilisations such as those of China and India have a large armamentaria of plants in their pharmacopoeias which are used throughout South East Asia. A similar situation exists in Africa and South America. Thus, a very high percentage of the World's population relies on medicinal and aromatic plants for their medicine. Western medicine is also responding. Already in Germany all medical practitioners have to pass an examination in phytotherapy before being allowed to practise. It is noticeable that throughout Europe and the USA, medical, pharmacy and health related schools are increasingly offering training in phytotherapy.

Multinational pharmaceutical companies have become less enamoured of the single compound magic bullet cure. The high costs of such ventures and the endless competition from me too compounds from rival companies often discourage the attempt. Independent phytomedicine companies have been very strong in Germany. However, by the end of 1995, eleven (almost all) had been acquired by the multinational pharmaceutical firms, acknowledging the lay public's growing demand for phytomedicines in the Western World.

The business of dietary supplements in the Western World has expanded from the Health Store to the pharmacy. Alternative medicine includes plant based products. Appropriate measures to ensure the quality, safety and efficacy of these either already exist or are being answered by greater legislative control by such bodies as the Food and Drug Administration of the USA and the recently created European Agency for the Evaluation of Medicinal Products, based in London.

In the USA, the Dietary Supplement and Health Education Act of 1994 recognised the class of phytotherapeutic agents derived from medicinal and aromatic plants. Furthermore, under public pressure, the US Congress set up an Office of Alternative Medicine and this office in 1994 assisted the filing of several Investigational New Drug (IND) applications, required for clinical trials of some Chinese herbal preparations. The significance of these applications was that each Chinese preparation involved several plants and yet was handled as a **single** IND. A demonstration of the contribution to efficacy, of **each** ingredient of **each** plant, was not required. This was a major step forward towards more sensible regulations in regard to phytomedicines.

My thanks are due to the staff of Harwood Academic Publishers who have made this series possible and especially to the volume editors and their chapter contributors for the authoritative information.

Roland Hardman

PREFACE

Herbal plants have served as a valuable resource, and have provided most of the therapeutic entities needed for traditional medicine. In recent decades, increasing attention has been paid to herbal plants by modern medicine. This is because on the one hand herbal plants have their basis of long-term application practice. On the other hand modern scientific knowledge and technologies have revealed that some new phytochemicals from natural plants could be beneficial for human beings.

In the foreseeable future, more and more herbal plants will cause interest and doubtlessly provide human beings with valuable agents of potential use in the research, prevention and treatment of various diseases and health problems.

One example is the plant *Perilla*, which has been traditionally used in Asian countries for medicine, garnish, food and food pigments, but is relatively unknown in the West. In recent years increasing literature has been published about the research and development of *Perilla*.

This book collects representative work about the plant *Perilla*, from its traditional use to newly found usage, from classical practice to modern scientific research, from cultivation to investigation, isolation and structural elucidation of some phytochemicals, from research to industrial development, from recent advances to future perspective of *Perilla*. Several of the chapters in this book touch on the application of *Perilla* extract for the treatment of allergy, the most widespread immunological disorder in humans.

It is our sincerest hope that this book will provide you with information on the past and present of *Perilla* that will help you to exploit its future.

He-Ci Yu
Kenichi Kosuna
Megumi Haga

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